

REMARKS

Claim Rejection Under 35 U.S.C. § 103(a) over Clough

Claims 1-11, 14-17, 20, 21, 23-28, 33-35, 38 and 39 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Patent No. 6,518,362 to Clough et al. (hereinafter “Clough”). Applicants respectfully traverse this rejection.

Clough generally describes a curable melt blended composition and a method of making the composition by melt blending a thermoplastic polymer comprising polyphenylene ether (PPE) polymer and a polystyrene polymer, and optionally a compatibilizer, with an uncured epoxy component, comprising a curable epoxy and an epoxy curing agent, at a temperature greater than 150°C and without addition of solvent. Clough abstract.

Applicants’ Claim 1 is direct to a curable composition comprising specific amounts of (a) a poly(arylene ether), (b) one or more of several specific thermosetting resins, (c) one or more of specific compatibilizing agents, and (d) one or more of specific amine cure agents. Claim 1 is reproduced below for the convenience of the Examiner.

1. (original) A curable composition, comprising:
about 5 to about 50 parts by weight of a poly(arylene ether);
about 25 to 90 parts by weight of a thermosetting resin selected from the group consisting of epoxy resins, polyester resins, polyimide resins, bis-maleimide resins, cyanate ester resins, vinyl resins, benzoxazine resins, benzocyclobutene resins, and mixtures comprising at least one of the foregoing thermosetting resins;
about 0.5 to about 15 parts by weight of a compatibilizing agent selected from the group consisting of polyvinyl acetal resins, styrene-butadiene-styrene block copolymers, styrene ethylene styrene block copolymers, styrene-ethylene-butylene-styrene block copolymers, functionalized butadiene-acrylonitrile copolymers, styrene-butadiene core shell rubbers, styrene-butadiene-styrene core shell rubbers, and mixtures comprising at least one of the foregoing compatibilizing agents; and
about 3 to about 150 parts by weight per 100 parts of weight of the thermosetting resin of an amine cure agent selected from the group consisting of amidoamines, polyamides, cycloaliphatic amines, modified cycloaliphatic amines, aromatic amines, modified aromatic amines, BF₃-amine adducts, imidazoles, guanidines, arylene polyamines, and mixtures comprising at least one of the foregoing amine cure agents;

wherein the parts by weight of the poly(arylene ether), the thermosetting resin, and the compatibilizing agent sum to 100.

Applicants' Claim 1 is patentable over Clough because Clough does not teach all elements of Claim 1. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A 1970). Notwithstanding the Examiner's assertion to the contrary, Clough does not teach any of Applicants' Claim 1 compatibilizing agents. The Examiner stated that Clough teaches "styrene/acrylonitrile or styrene/butadiene block copolymer compatibilizer." 4/6/04 Office Action, page 2, final paragraph. Although Clough does teach "styrene-acrylonitrile (SAN) copolymers" (col. 4, line 50), such copolymers are not among Applicants' Claim 1 compatibilizers. And Clough does not teach any styrene/butadiene block copolymers, let alone the styrene-butadiene-styrene block copolymers of Claim 1. Note, in particular, that one of ordinary skill in the art would interpret "poly(styrene-co-butadiene)" (col. 1, l. 22) as a random copolymer, and that Clough's "functionalized block copolymers" (col. 4, lines 61-62) necessarily include heteroatom functional groups that chemically distinguish these molecules from Applicants' Claim 1 "styrene-butadiene-styrene block copolymers." Thus, Clough fails to teach any of Applicants' Claim 1 compatibilizers, and Clough therefore cannot support a prima facie case of obviousness against Claim 1.

Since Claims 2-11, 14-17, 20, 21, 23-28, 33-35, 38 and 39 each include or further limit all the limitations of Claim 1, Applicants respectfully request the reconsideration and withdrawal of the rejection of Claims 1-11, 14-17, 20, 21, 23-28, 33-35, 38 under 35 U.S.C. § 103(a) over Clough.

Claim Rejection Under 35 U.S.C. § 103(a) over Clough in view of Lee

Claims 18 and 19 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Clough in view of U.S. Patent No. 5,397,822 to Lee, Jr. (hereinafter "Lee"). Applicants respectfully traverse this rejection.

Lee generally describes a thermoplastic resin composition having in admixture a polyphenylene ether resin and an elastomeric block copolymer, and optionally including additives such as siloxane fluids, flame retardants, polyolefins, and phosphates, as well as fillers, etc. Lee abstract. Optional plasticizers, including resorcinol diphosphate, are described. Lee, col. 8, ll. 8-50.

Lee is cited for its teaching “that resorcinol diphosphate is a preferred art recognized phosphate plasticizer for use with polyphenylene ether.” 4/6/04 Office Action, page 3, first full paragraph. Applicants do not dispute this teaching. However, for several reasons, Lee cannot remedy Clough’s failure to teach Applicants’ Claim 1 compatibilizers, discussed above.

First, one of ordinary skill in the art would have no motivation to combine Lee and Clough. Establishing a *prima facie* case of obviousness based on multiple references requires that the Office set forth a teaching or motivation to combine the references.

Ecolochem, Inc. v. Southern California Edison Co., 56 U.S.P.Q.2d 1065, 1073 (Fed. Cir. 2000). One of ordinary skill in the art would not be motivated to “borrow” components of Lee, which is directed to thermoplastic compositions for wire insulation that requires flexibility and stretchability (col. 1, ll. 50-54), for use in the curable compositions of Clough, where the required epoxy component contributes rigidity and the compositions are used as adhesives and coatings (col. 11, ll. 46-51). Such a borrowing would be contrary to the teachings of the references as a whole. *In re Napier*, 34 U.S.P.Q.2d 1782, 1784 (Fed. Cir. 1995) (while the suggestion to modify the primary reference need not be expressly stated in one or all cited references, the combined teachings of the prior art, taken as a whole, must render the claimed invention obvious to one of ordinary skill in the art).

Second, even if there were a motivation to combine Clough and Lee, there is no suggestion or expectation of success for employing any of Lee’s elastomeric block copolymer combinations in the compositions of Clough. It is well established that both the suggestion and the expectation of success must be founded in the prior art, not in Applicant’s disclosure. *In re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988).

Neither Clough nor Lee provides any suggestion or expectation of success for employing Lee's elastomeric block copolymer combinations in Clough's adhesive compositions.

Third, Clough teaches away from the substitution of Lee's elastomeric block copolymer combinations for Clough's polystyrene polymer. A reference's teaching away from an applicant's claimed invention represents "strong evidence of unobviousness". *In re Hedges*, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986). Clough expresses distinct preferences for particular polystyrene polymers (col. 4, lines 13-30) and functionalized polystyrene compatibilizers (col. 4, lines 31-65) and thus teaches away from any chemically distinct elastomeric block copolymers taught by Lee.

For all of the above reasons, Lee therefore cannot remedy Clough's failure to teach Applicants' Claim 1 compatibilizers. Since Clough and Lee do not support a prima facie case of obviousness against Claim 1, and since Claims 18 and 19 depend ultimately from Claim 1, Applicants respectfully request the reconsideration and withdrawal of the rejection of Claims 18 and 19 under 35 U.S.C. § 103(a) over Clough in view of Lee.

Provisional nonstatutory double patenting rejection

Claims 1-16, 18-21, 23-28, 33-35, 38 and 39 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over Claims 1-27 of copending application serial number 09/644,012 in view of Clough. Applicants respectfully traverse the rejection. Applicants are submitting herewith a terminal disclaimer in compliance with 37 CFR § 1.321(c) to overcome the rejection.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 07-0862 maintained by Assignee.

Respectfully submitted,

CANTOR COLBURN LLP
Applicants' Attorneys

By: J. Michael Buchanan
J. Michael Buchanan
Registration No. 44,571

Date: May 25, 2004
Customer No.: 23413
Telephone: (860) 286-2929